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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/698,994 | 10/31/2003 | Naoshige Itami | 3408.68664 | 8859 |
| 24978 7590 03/17/2008 GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606 | | | | |
| EXAMINER | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/698,994

Applicant(s)

ITAMI ET AL.

Examiner

PHU VU

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-18 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 12/17/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/07 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanoh et al US Patent No 6181396.

Regarding claim 1-2, Kanoh teaches a method of manufacturing a substrate for a liquid crystal display device comprising the steps of forming a resin layer on a substrate (fig 1 bottom layer) selectively reforming the surface portion of the resin layer by applying energy (column 6 lines 25-70) with an energy per unit time of a prescribed

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value or more to said resin layer to generate a thermal shrinkage between said surface portion and the layer portion other than the surface portion in the resin layer wherein the energy-applied results in a difference in thermal shrinkage; performing a heat treatment (column 6 lines 25-70) to said layer to form random wrinkles of micro-grooves in said surface portion, and forming reflective electrodes (5) on the surface portion.

Regarding claim 9, the reference teaches a liquid crystal display in which a pair of substrates are manufactured and the substrates are mutually stuck together so that liquid crystal is sealed between the substrates (see fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanoh in view of Ichimura et al US Patent No 6327009.

Regarding claims, 3-4, Kanoh teaches all the limitations of claims 3 -4 except the UV curing energy applied exceeding 12 mW/cm^2 . Ichimura discloses a process of curing a photosensitive resin by heating and partially curing the uses UV light exceeding 12 mW/cm^2 to create a display with improved visibility (see column 2 lines 58-65 and

column 5 lines 25-60). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a UV curing process exceeding 12mW/cm^2 to create a display with improved visibility.

Regarding claim 7 with respect to claims 1-4, Kanoh teaches use of a photosensitive resin (polyimide).

Regarding claim 8 with respect to claims 1-4, Kanoh discloses all the limitations of claim 8 except the photosensitive resin is a novolac resist. Ichimura discloses novolac as a commercially available resin (see column 8 lines 4-14). Therefore, it would have been obvious to one of ordinary skill in the art to use novolac as it is readily available photosensitive resin.

Regarding claim 9 with respect to claims 3-4, Kanoh teaches a liquid crystal display in which a pair of substrates are manufactured and the substrates are mutually stuck together so that liquid crystal is sealed between the substrates (see fig. 1).

Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanoh in view of Codama US Patent no 6339291.

Regarding claims 5-6 and claim 8 with respect to claims 5 and 6, Kanoh discloses all the limitations of claims 5 and 6 except irradiation of ultraviolet rays with an illumination below 12mW/cm^2 of a novolac resin layer in a semi-hardened condition prior to application of energy and wherein the heat treatment of the resin layer is performed at a prescribed temperature prior to application of energy. Codama teaches a semi-hardened novolac resin wherein energy is applied at a rate of 10mW/cm^2 wherein the resin layer is semi-hardened prior to the application energy through heat

treatment a prescribed temperature that undergoes little shrinkage during curing (see column 8 lines 6-11 and 60-67 and 9 lines 1-6). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a novolac resin wherein energy is applied at a rate of 10 mW/cm^2 to a semi-hardened resin layer to reduce shrinkage during curing. While Codama's invention pertains to a organic EL device Codama also states that these features are applicable to liquid crystal technology (see column 12 line 10-11).

Regarding claim 7 with respect to claims 5-6, Kanoh teaches use of a photosensitive resin (polyimide).

Regarding claim 9 with respect to claims 5-6, Kanoh teaches a liquid crystal display in, which a pair of substrates are manufactured and the substrates are mutually stuck together so that liquid crystal is sealed between the substrates (see figure 1).

Allowable Subject Matter

Claims 14-18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 14-18. There is no prior art of record that teaches a method of manufacturing a substrate for a liquid-crystal display device comprising steps of: forming a resin layer on a substrate; selectively- reforming the surface portion of said resin layer by applying energy with an energy per unit time of a prescribed value without using a mask to generate a difference in rate of thermal shrinkage between said surface portion and the layer portion other than the surface portion in said resin layer;

performing a heat treatment to form random wrinkles of micro-grooves in said surface portion; and forming reflective electrodes on said surface portion.

Kanoh as cited in the rejection above uses a mask in each embodiment

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHU VU whose telephone number is (571)272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Phu Vu
Examiner
AU 2871

/David Nelms/
Supervisory Patent Examiner, Art Unit 2871